AMENDMENTS TO THE CLAIMS

1-48. (Previously Cancelled).

49. (Previously Presented) A system for duplicating a hologram comprising:

a radiation source for emitting a coherent beam of radiation;

a hologram having an electrically controllable variable diffraction efficiency; and

a recording substrate comprised of a polymer-dispersed liquid crystal material for recording a replica of the hologram having an electrically controllable variable diffraction efficiency therein, wherein the hologram and the recording substrate are in optical contact with one another and are placed in a path of the coherent beam of radiation.

50. (Previously Presented) The system according to claim 49, wherein the polymer-dispersed liquid crystal material is comprised of:

(a) a polymerizable monomer comprising at least one acrylate;

(b) at least one type of liquid crystal material;

(c) a chain-extending monomer;

(d) a coinitiator; and

(e) a photoinitiator.

51. (Previously Presented) The system according to Claim 50, wherein the polymerizable monomer comprises a mixture of di-, tri-, tetra-, and penta-acrylates

52. (Previously Presented) The system according to Claim 50, wherein the polymerizable monomer is at least one acrylate selected from the group consisting of triethyleneglycol diacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, pentaerythritol tetracrylate, and dipentaerythritol penta-acrylate.

53. (Previously Presented) The system according to Claim 50, wherein the polymerizable monomer comprises a mixture of tri- and penta-acrylates.

54. (Previously Presented) The system according to Claim 50, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate.

55. (Previously Presented) The system according to Claim 49, wherein the polymer-dispersed liquid crystal material further comprises a surfactant.

56. (Previously Presented) The system according to Claim 55, wherein the surfactant is octanoic acid.

57. (Previously Presented) The system according to Claim 50, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate, the at least one liquid crystal material comprises a mixture of cyanobiphenyls, the chain-extending monomer is N-vinyl pyrrolidone, the coinitiator is N-phenylglycine, and the photoinitiator is rose bengal.

58. (Previously Presented) The system according to claim 49, wherein the radiation source is a laser.

59. (Previously Presented) The system according to claim 49, wherein a diffraction efficiency of the hologram is continuously variable.

60. (Previously Presented) A method for duplicating a hologram comprising:

directing a coherent incident radiation beam at a first optical component;

transmitting the coherent incident radiation beam through the first optical component forming a transmitted beam, to a second optical component having a hologram with an electrically controllable variable diffraction efficiency recorded therein; and

diffracting the transmitted beam via the hologram forming a diffracted radiation beam, wherein the coherent incident radiation beam and the diffracted beam interfere within

the first optical component to form a replica of the hologram having an electrically controllable variable diffraction efficiency therein.

61. (Previously Presented) The method for duplicating a hologram according to claim 60, wherein the first optical component is comprised of a polymer-dispersed liquid crystal material.

62. (Previously Presented) The method according to claim 61, wherein the polymer-dispersed liquid crystal material is comprised of:

(a) a polymerizable monomer comprising at least one acrylate;

(b) at least one type of liquid crystal material;

(c) a chain-extending monomer;

(d) a coinitiator; and

(e) a photoinitiator.

63. (Previously Presented) The method according to Claim 62, wherein the polymerizable monomer comprises a mixture of di-, tri-, tetra-, and penta-acrylates.

64. (Previously Presented) The method according to Claim 62, wherein the polymerizable monomer is at least one acrylate selected from the group consisting of triethyleneglycol diacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, pentaerythritol tetracrylate, and dipentaerythritol penta-acrylate.

65. (Previously Presented) The method according to Claim 62, wherein the polymerizable monomer comprises a mixture of tri- and pentaacrylates.

66. (Previously Presented) The method according to Claim 62, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate.

67. (Previously Presented) The method according to Claim 62, wherein the polymer-dispersed liquid crystal material further comprises a surfactant.

68. (Previously Presented) The method according to Claim 67, wherein the surfactant is octanoic acid.

69. (Previously Presented) The method according to Claim 62, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate, the at least one liquid crystal material comprises a mixture of cyanobiphenyls, the chain-extending monomer is N-vinyl pyrrolidone, the coinitiator is N-phenylglycine, and the photoinitiator is rose bengal.

70. (Previously Presented) A method for duplicating a hologram comprising:

directing a coherent radiation beam at a first optical component having a hologram with an electrically controllable variable diffraction efficiency recorded therein;

diffracting a first portion of the coherent radiation beam via the hologram forming a diffracted radiation beam;

transmitting a second portion of the coherent radiation beam through the first optical component forming a transmitted beam; and

interfering the diffracted radiation beam with the transmitted radiation beam within a second optical component to form a replica of the hologram having an electrically controllable variable diffraction efficiency therein.

71. (Previously Presented) The method for duplicating a hologram according to claim 70, wherein the second optical component is comprised of a polymer-dispersed liquid crystal material.

72. (Previously Presented) The method according to claim 71, wherein the polymer-dispersed liquid crystal material is comprised of:

(a) a polymerizable monomer comprising at least one acrylate;

(b) at least one type of liquid crystal material;

(c) a chain-extending monomer;

(d) a coinitiator; and

(e) a photoinitiator.

73. (Previously Presented) The method according to Claim 72, wherein the polymerizable monomer comprises a mixture of di-, tri-, tetra-, and penta-acrylates.

74. (Previously Presented) The method according to Claim 72, wherein the polymerizable monomer is at least one acrylate selected from the group consisting of triethyleneglycol diacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, pentaerythritol tetracrylate, and dipentaerythritol pentaacrylate.

75. (Previously Presented) The method according to Claim 72, wherein the polymerizable monomer comprises a mixture of tri- and penta-acrylates.

76. (Previously Presented) The method according to Claim 72, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate.

77. (Previously Presented) The method according to Claim 72, wherein the polymer-dispersed liquid crystal material further comprises a surfactant.

78. (Previously Presented) The method according to Claim 77, wherein the surfactant is octanoic acid.

79. (Previously Presented) The method according to Claim 72, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate, the at least one liquid crystal material comprises a mixture of cyanobiphenyls, the chain-extending monomer is N-vinyl pyrrolidone, the coinitiator is N-phenylglycine, and the photoinitiator is rose bengal.

80. (NEW) A system for duplicating a hologram comprising:

a radiation source for emitting a coherent beam of radiation;

a hologram having an electrically controllable variable diffraction efficiency; and

a recording substrate comprised of a polymer-dispersed liquid crystal material for recording a replica of the hologram having an electrically controllable variable diffraction efficiency therein in a single step forming a photochemically cured polymer matrix, wherein the hologram and the recording substrate are in optical contact with one another and are placed in a path of the coherent beam of radiation; and

further wherein polymer-dispersed liquid crystal material has an anisotropic spatial distribution of phase-separated liquid crystal droplets within the photochemically cured polymer matrix.

81. (NEW) The system according to claim 80, wherein the polymer-dispersed liquid crystal material is comprised of:

(a) a polymerizable monomer comprising at least one acrylate;

(b) at least one type of liquid crystal material;

(c) a chain-extending monomer;

(d) a coinitiator; and

(e) a photoinitiator.

82. (NEW) The system according to Claim 81, wherein the polymerizable monomer comprises a mixture of di-, tri-, tetra-, and penta-acrylates

83. (NEW) The system according to Claim 81, wherein the polymerizable monomer is at least one acrylate selected from the group consisting of triethyleneglycol diacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, pentaerythritol tetracrylate, and dipĕntaerythritol penta-acrylate.

84. (NEW) The system according to Claim 81, wherein the polymerizable monomer comprises a mixture of tri- and penta-acrylates.

85. (NEW) The system according to Claim 81, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate.

86. (NEW) The system according to Claim 80, wherein the polymer-dispersed liquid crystal material further comprises a surfactant.

87. (NEW) The system according to Claim 86, wherein the surfactant is octanoic acid.

88. (NEW) The system according to Claim 81, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate, the at least one liquid crystal material comprises a mixture of cyanobiphenyls, the chain-extending monomer is N-vinyl pyrrolidone, the coinitiator is N-phenylglycine, and the photoinitiator is rose bengal.

89. (NEW) The system according to claim 80, wherein the radiation source is a laser.

90. (NEW) The system according to claim 80, wherein a diffraction efficiency of the hologram is continuously variable.